

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Currently Amended) An image processing apparatus for encoding input moving image data, comprising:

first segmentation means for making subband segmentation of the input moving image data into in units of frames using wavelet transformation;

second segmentation means for making subband segmentation of the input moving image data in units of fields using wavelet transformation;

arithmetic means for making an arithmetic process of first subbands obtained by said first segmentation means; and

discrimination means for discriminating based on a first arithmetic value obtained by said arithmetic means if whether to apply said first or second segmentation means ~~is applied~~ to the input moving image data,

wherein a discrimination of said discrimination means is not performed on the basis of subbands obtained by said second segmentation means.

2. (Withdrawn) The apparatus according to claim 1, wherein said arithmetic means also makes the arithmetic process for second subbands obtained by said second segmentation means to output a second arithmetic value.

3. (Withdrawn) The apparatus according to claim 2, wherein said discrimination means discriminates based on the first and second arithmetic values if said first or second segmentation means is applied to the input moving image data.

4. (Currently Amended) The apparatus according to claim 1, wherein said discrimination means discriminates based on a comparison result between the first arithmetic value and a predetermined value if whether to apply said first or second segmentation means ~~is applied~~ to the input moving image data.

5. (Withdrawn) The apparatus according to claim 1, wherein a discrimination result of said discrimination means is generated as identification information.

6. (Original) The apparatus according to claim 1, wherein said arithmetic means makes the arithmetic process of a high-frequency subband obtained after the input moving image data has undergone vertical subband segmentation.

7. (Original) The apparatus according to claim 1, wherein said arithmetic means makes the arithmetic process of a high-frequency subband obtained after the input moving image data has undergone vertical subband segmentation and horizontal subband segmentation.

8. (Original) The apparatus according to claim 1, wherein said arithmetic means makes the arithmetic process for computing one of an entropy, signal power, and variance of the subband.

9. (Original) The apparatus according to claim 1, wherein when said discrimination means determines that said second segmentation means is applied, vertical subband segmentation by said second segmentation means uses data obtained after said first segmentation means executes horizontal subband segmentation of the input moving image data.

10. and 11. (Canceled)

12. (Currently Amended) An image processing method for encoding input moving image data, comprising:

~~the~~ a first segmentation step₁ of making subband segmentation of the input moving image data in units of frames using wavelet transformation;

~~the~~ a second segmentation step₂ of making subband segmentation of the input moving image data in units of fields using wavelet transformation;

~~the~~ an arithmetic step₃ of making an arithmetic process of first subbands obtained in ~~the~~ said first segmentation step; and

~~the a~~ discrimination step₁ of discriminating based on a first arithmetic value obtained in ~~the said~~ arithmetic step ~~if the~~ whether to apply said first or second segmentation step ~~is applied~~ to the input moving image data,
wherein a discrimination in said discrimination step is not performed on the basis of subbands obtained by said second segmentation step.

13. (Withdrawn) The method according to claim 12, wherein the arithmetic step includes the step of also making the arithmetic process for second subbands obtained in the second segmentation step to output a second arithmetic value.

14. (Withdrawn) The method according to claim 13, wherein the discrimination step includes the step of discriminating based on the first and second arithmetic values if the first or second segmentation step is applied to the input moving image data.

15. (Currently Amended) The method according to claim 12, wherein ~~the said~~ discrimination step includes the step of discriminating based on a comparison result between the first arithmetic value and a predetermined value ~~if the~~ whether to apply said first or second segmentation step ~~is applied~~ to the input moving image data.

16. (Withdrawn) The method according to claim 12, wherein a discrimination result in the discrimination step is generated as identification information.

17. (Currently Amended) The method according to claim 12, wherein ~~the~~ said arithmetic step includes the step of making the arithmetic process of a high-frequency subband obtained after the input moving image data has undergone vertical subband segmentation.

18. (Currently Amended) The method according to claim 12, wherein ~~the~~ said arithmetic step includes the step of making the arithmetic process of a high-frequency subband obtained after the input moving image data has undergone vertical subband segmentation and horizontal subband segmentation.

19. (Currently Amended) The method according to claim 12, wherein ~~the~~ said arithmetic step includes the step of making the arithmetic process for computing one of an entropy, signal power, and variance of the subband.

20. (Currently Amended) The method according to claim 12, wherein, when it is determined in ~~the~~ said discrimination step that ~~the~~ said second segmentation step is applied, vertical subband segmentation in ~~the~~ said second segmentation step uses data obtained after horizontal subband segmentation of the input moving image data is executed in ~~the~~ said first segmentation step.

21. and 22. (Canceled)

23. (Currently Amended) A computer readable memory that stores a program code of an image process for encoding input moving image data, comprising:

[[a]] program code of ~~the~~ a first segmentation step, of making subband segmentation of the input moving image data in units of frames using wavelet transformation;

[[a]] program code of ~~the~~ a second segmentation step, of making subband segmentation of the input moving image data in units of fields using wavelet transformation;

[[a]] program code of ~~the~~ an arithmetic step, of making an arithmetic process of first subbands obtained in ~~the~~ said first segmentation step; and

[[a]] program code of ~~the~~ a discrimination step, of discriminating based on a first arithmetic value obtained in the arithmetic step ~~if the~~ whether to apply said first or second segmentation step ~~is applied~~ to the input moving image data,

wherein a discrimination in said discrimination step is not performed on the basis of subbands obtained by said second segmentation step.

24. (Canceled)

25. (Withdrawn) An image processing apparatus for encoding input moving image data, comprising:

first segmentation means for making horizontal subband segmentation of the moving image data using wavelet transformation;

discrimination means for discriminating a type of subband segmentation to be applied to the moving image data on the basis of subbands obtained by said first segmentation means; and

second segmentation means for making subband segmentation of the moving image data in units of frames or fields using wavelet transformation on the basis of a discrimination result of said discrimination means.

26. (Withdrawn) The apparatus according to claim 25, wherein said discrimination means discriminates the type of subband segmentation applied to the moving image data on the basis of a low-frequency subband of the subbands obtained by said first segmentation means.

27. (Withdrawn) The apparatus according to claim 26, wherein said discrimination means computes a sum of absolute values of differences between pixels which form the low-frequency subband, and discriminates the type of subband segmentation applied to the moving image data on the basis of the computed value.

28. (Withdrawn) The apparatus according to claim 26, wherein said discrimination means discriminates the type of subband segmentation applied to the moving image data on the basis of pixels obtained by decimating pixels which form the low-frequency subbands in one or both of horizontal and vertical directions.

29. (Withdrawn) The apparatus according to claim 26, wherein said discrimination means recursively makes horizontal subband segmentation of the low-frequency subband, and discriminates the type of subband segmentation applied to the moving image data on the basis of a final low-frequency subband.

30. (Withdrawn) The apparatus according to claim 25, further comprising encoding means for generating encoded data containing subbands obtained by said second segmentation means, and identification information indicating a discrimination result of said discrimination means.

31. (Withdrawn) An image processing method for encoding input moving image data, comprising:

the first segmentation step of making horizontal subband segmentation of the moving image data using wavelet transformation;

the discrimination step of discriminating a type of subband segmentation to be applied to the moving image data on the basis of subbands obtained in the first segmentation step; and

the second segmentation step of making subband segmentation of the moving image data in units of frames or fields using wavelet transformation on the basis of a discrimination result in the discrimination step.

32. (Withdrawn) The method according to claim 31, wherein the discrimination step includes the step of discriminating the type of subband segmentation applied to the moving image data on the basis of a low-frequency subband of the subbands in the said first segmentation step.

33. (Withdrawn) The method according to claim 32, wherein the discrimination step includes the step of computing a sum of absolute values of differences between pixels which form the low-frequency subband, and
discriminating the type of subband segmentation applied to the moving image data on the basis of the computed value.

34. (Withdrawn) The method according to claim 32, wherein the discrimination step includes the step of discriminating the type of subband segmentation applied to the moving image data on the basis of pixels obtained by decimating pixels which form the low-frequency subbands in one or both of horizontal and vertical directions.

35. (Withdrawn) The method according to claim 32, wherein the discrimination step includes the step of recursively making horizontal subband segmentation of the low-frequency subband, and discriminating the type of subband segmentation applied to the moving image data on the basis of a final low-frequency subband.

36. (Withdrawn) The method according to claim 31, further comprising the encoding step of generating encoded data containing subbands obtained in the second segmentation step, and identification information indicating a discrimination result of the discrimination step.

37. (Withdrawn) A computer readable memory that stores a program code of an image process for encoding input moving image data, comprising:

a program code of the first segmentation step of making horizontal subband segmentation of the moving image data using wavelet transformation;

a program code of the discrimination step of discriminating a type of subband segmentation to be applied to the moving image data on the basis of subbands obtained in the first segmentation step; and

a program code of the second segmentation step of making subband segmentation of the moving image data in units of frames or fields using wavelet transformation on the basis of a discrimination result in the discrimination step.